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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,132	03/31/2004	Gary A. Brist	42P18776	9646

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EXAMINER	
LAM, CATHY FONG FONG	

ART UNIT	PAPER NUMBER
1794	

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02/02/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/816,132	BRIST ET AL.	
	Examiner	Art Unit	
	Cathy Lam	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18 and 30-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 6-13, 16-18, 30-43* is/are rejected.

7)☒ Claim(s) *4,5,14 and 15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

In view of the amendment and remarks filed on October 30, 2008, the 112 1st and 2nd paragraph rejections have been withdrawn. The pending claims however continue to be unpatentable as following:

Claim Rejections - 35 USC § 103

1. Claims 1-3, 6-9; 10-13, 16-18 and 30-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnaud et al (US 6872453) or Larson (US 6229514) or Parker (US 4922242).

Arnaud teaches a thermochromatic layer which is associated with electrically conducting layers. The conducting layers are connected to supply of electricity (or power) for heating up by resistance heating (col 5 L 56-58 & col 6 L1-4).

The thermochromatic layer responses the heat generated by the conducting layers and switch to its reflecting or absorbent state when required (col 6 L 4-6).

Arnaud teaches that the switching temperature of the thermochromatic layer **can be set** by regulating the electrical supply which is regulated by electronic means. Arnaud has set the switching temperature from around 30°C to 40°C (i.e. 86°F-104°F) (col 6 L 41-46).

Arnaud teaches a structure of a substrate, conducting layer and a thermochromatic layer, in the named order. Furthermore, a barrier layer such as SiO_2 can be inserted between the conductive layer and the thermochromatic layer (col 6 L 63-66). Other organic or inorganic layers can be **glazed on or under the thermochromatic layer** (col 7 L 1-31). The examiner takes the position that this barrier layer and/or this glazing layer resemble the claimed solder mask layer and that this

solder mask layer or other organic or inorganic layers is integrated with the thermochromatic layer.

The thermochromatic layer which is formed from vanadium oxide ***gives visual effect when heated*** (col 5 L 66-col 6 L 6).

Larson discloses a display comprised of a substrate (10), electrode patterns (4,5) and a visualization medium (8); all in the named order.

The visualization medium (8) is temperature sensitive and changes color upon heating of the electrodes (col 5 L 10-17). The electrodes are connected to control units (e.g. integrated driving circuits) (col 4 L 49-53). The visualization medium transforms a spot heat to a visible dot (9), the examiner takes the position that this is analogous to the identification markings as stated in claim 9.

The examiner takes the position that the electrodes on the substrate resemble the heat generating component on a printed circuit board and the visualization medium resembles the thermochromatic coating. The thermochromatic coating is ***opaque at room temperature but becomes transparent when heated*** (col 6 L25-29). The thermochromatic material can be a liquid crystal material (col 6 L 30-33).

Parker discloses a thermochromatic material coated substrate comprised of electrodes, a pigment layer, a transparent substrate, a mask and a thermochromatic material.

Electrodes (122,122') are formed onto both surfaces of the substrate (121) wherein the substrate includes a resistive element (col 3 L 3-34). A mask (7) having a cutout pattern is placed adjacent to the first surface of the substrate (col 2 L 64-68). The thermochromatic material is applied to the second surface of the substrate (Fig. 2). Such that from Fig. 2, the thermochromatic material is placed below the mask (7).

The thermochromatic material can be a liquid crystal polymer (col 5 L 21-23). At the transition temperature, the thermochromatic material ***changes from opaque white to transparent*** (col 5 L 38-39).

The examiner takes the position that the electrodes on the resistive element is equivalent to a signal layer on a printed circuit board and the electrodes resemble the heat generating component. Also, the examiner takes the position that the thermochromatic material is integrated with the mask layer (7).

All three prior art teach a thermochromatic layer that is coated over some electronic components; the thermochromatic layer has visual effect that changes from one color state to another state upon reaching a pre-set temperature.

According to Arnaud's teaching, the temperature that causes the thermochromatic layer to switch to its reflecting/absorbent state can be set by controlling the supply of electricity to the conductive layers (col 6 L 66 - col 6 L 6).

In view of the prior art teachings, one of ordinary skill in the art would choose a temperature range which would not trigger the thermochromatic layer to react or change

color *until* the temperature reaches an undesired level because such finding involves basic design schemes.

Allowable Subject Matter

2. Claims 4-5 and 14-15 are objected to as being dependent upon a rejected base claim, but would be allowable if incorporate into independent claims.

3. The following is a statement of reasons for the indication of allowable subject matter: Applicant in the remarks states different specific formulations of thermochromatic materials result in different activation temperatures, thus the presently claimed thermochromatic materials must be tied to the activation temperatures. Applicant is urged to incorporate the limitations of claims 4-5 or 14-15 into all the independent claims.

Response to Arguments

4. Applicant's arguments filed on 10-30-2008 have been fully considered but they are not persuasive. Applicant in the remarks traverses the art rejections and raises the following issues:

A. Arnaud discloses a sun switch, the normal operating temperatures of the sun switch must be above the switching temperature of the thermochromaitc material in order for the switch to operate as intended.

B. Larson relates to a display it has an activation temperature within the normal operating temperatures of the display, otherwise the display would be inoperable.

In respond to the above issues:

A&B. All of the three cited prior art relate to an electrical device having a thermochromatic layer, which has optically properties and responsive to temperature changes. All the prior art thermochromatic layers visually changes from a first color state to another color state when a certain preset temperature was reached.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (571) 272-1538. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cathy Lam/
Primary Examiner, Art Unit 1794